

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent Application of:

Eitaro MORITA

Conf. No.: 8814

Group Art Unit: 1764

Appln. No.: 10/816,274

Examiner: Ellen M. McAvoy

Filing Date: April 1, 2004

Attorney Docket No.: 8305-244US (NP151-1)

Title: LUBRICATING OIL COMPOSITION



DECLARATION UNDER 37 C.F.R. § 1.132

I, Eitaro MORITA, declare and state that:

1. I graduated from Keio University, Faculty of Science and was conferred a master's Degree from the same university.

I was employed by Nippon Oil Co., Ltd. in 1987. Currently, I am employed by Nippon Oil Corporation, which is the assignee of the above-identified patent application in their Lubricants Research Laboratory, where I have been actively engaged in the research and development of lubricating oils, focusing on particularly lubricating oils for transmissions.

2. I am well acquainted with the field of lubricating oils and therefore conducted experiments described below on behalf of the assignee.

3. I have reviewed the final Office Action dated January 9, 2008 in the above-identified patent application, and copies of U. S. Patent Nos. 6,617,286 B2 (Sato et al., "Sato"), 6,638,897 B2 (Ogano et al., "Ogano"), 6,720,293 B2 (Bovington et al., "Bovington") and 6,613,722 B1 (Watts et al., "Watts") in which the Examiner has rejected all of the pending claims under 35 U. S. C. §103 (a) over each of Sato, Ogano and Bovington, or optionally in view of Watts.

This Declaration has been prepared to address the arguments made by the Examiner in support of his rejections of the claims.

4. It is my understanding that the Examiner's positions are as follows.

(1) Sato discloses a lubricating oil composition comprising the

Components (A) a base oil, (B) calcium salicylate, (C) a sulfur-phosphorus type extreme pressure additive and (E) a boron-containing ashless dispersant, which are each recited in the claims of the present application but does not teach Component (D) which is specific succinimide compounds represented by formulas (3) and/or (4) wherein R11, R14 and R15 are each an alkyl or alkenyl group having 12 to 25 carbon atoms.

However, Component (D) of the specific succinimide compounds is disclosed in Watts.

Therefore, it would be obvious to those skilled in the art to add Component (D) of the specific succinimide compounds disclosed in Watts to the lubricating oil composition of Sato in order to provide the resulting composition with the desired performance.

(2) Ogano discloses a lubricating oil composition comprising Components (A) a base oil, (B) calcium salicylate, (C) a sulfur-phosphorus type extreme pressure additive and (E) a boron-containing ashless dispersant, which are each recited in the claims of the present application but does not teach Component (D) which is specific succinimide compounds represented by formulas (3) and/or (4) wherein R11, R14 and R15 are each an alkyl or alkenyl group having 12 to 25 carbon atoms.

However, Ogano teaches using succinimide compounds having the preferable range of a Mw of 2100 or less encompassing the Mw of the claimed succinimide, although Ogano does not disclose specifically Component (D) of the Claims.

Therefore, it would be obvious to those skilled in the art to add Component (D) of the specific succinimide compounds to the lubricating oil composition of Ogano in order to provide the resulting composition with the desired performance.

(3) Bovington discloses a lubricating oil composition comprising Components (A) a base oil, (B) calcium salicylate, (C) a sulfur-phosphorus type extreme pressure additive and (E) a boron-containing ashless dispersant, which are each recited in the claims of the present application but does not teach Component (D) which is specific succinimide compounds represented by formulas (3) and/or (4) wherein R11, R14 and R15 are each an alkyl or alkenyl group having 12 to 25 carbon atoms.

However, Bovington discloses a broader molecular weight range of 300 to 20,000 for the oil-soluble polymeric hydrocarbon backbone of the dispersant

component and the molecular weight of 621 for the mono-imide and 1053 for the bis-imide of the claims for succinimide Component (D) is within the disclosure of suitable non-borated succinimide compounds taught by Bovington.

Therefore, it would be obvious to those skilled in the art to add Component (D) of the specific succinimide compounds to the lubricating oil composition of Bovington in order to provide the resulting composition with the desired performance.

5. In order to overcome the Examiner's rejection, we have amended the current Claim 1 by limiting Components (A), (D) and the use of the claimed lubricating oil composition, to a base oil comprising (A-1) and (A-2), specific succinimide compounds represented by formulas (3) and/or (4) wherein R11, R14 and R15 are each an alkyl or alkenyl group having 8 to 18 carbon atoms and automatic transmissions or continuously variable transmissions, respectively, and further by incorporating Component (I) which is a friction modifier selected from fatty acid esters and/or fatty acid metal salts.

6. Further, in order to demonstrate and prove the advantageous effects of the amended claimed composition which contains the specific succinimide compounds represented by formula (4) wherein R14 and R15 are each a C18 alkyl or alkenyl group, as Component (D), I have conducted additional experiments as Inventive Example 9, and Reference Examples 1 and 2.

The sample oil compositions for the Examples were prepared using Inventive Example 7, which comprises Components (A) to (I) with some modifications described below, and the resulting compositions were evaluated in the same manner as that set forth in the original specification.

#### [Inventive Example 9]

The sample oil composition for Inventive Example 9 was prepared by replacing bis-succinimides A of Inventive Example 7 set forth in TABLE 1-2 at pages 10-11 with bis-succinimide B having an Mw of 855.

Bis-succinimide A: Diethylenetriamine bis (iso-octadecenyl) succinimide

Bis-succinimide B: Tetraethylenepentamine bis (iso-octadecenyl) succinimide

#### [Reference Example 1]

The sample oil composition for Reference Example 1 was prepared by replacing bis-succinimides A of Inventive Example 7 with bis-succinimide A', which has an Mw of 851 corresponding to that of the bis-succinimides wherein the PIB has an Mw of 300 as disclosed in Bovington.

[Reference Example 2]

The sample oil composition for Reference Example 2 was prepared by replacing bis-succinimides B of Inventive Example 9 with bis-succinimide B', which has an Mw of 939 corresponding to that of the bis-succinimides wherein the PIB has an Mw of 300 as disclosed in Bovington.

The test results of Inventive Example 9, and Reference Examples 1 and 2 are set forth in Table A below together with those of Inventive Example 7.

Table A

	Bis-succinimide	Mw	Ex. 7	Ref.Ex.1	Ex.9	Ref.Ex.2
DETA	A	767	2	—	—	—
	A'	851	—	2	—	—
TEPA	B	855	—	—	2	—
	B'	939	—	—	—	2
Fatigue life h			120<	120<	120<	120<
Anti-shudder durability ratio			4<	0	4<	0

7. It is apparent from the test results set forth in Table A that the sample oil composition of Inventive Example 9 as well as Inventive Example 7, which contains bis-succinimide A or bis-succinimide A' as (D) Component, exhibited satisfactory anti-shudder durability ratio, but the sample oil compositions of Reference Examples 1 and 2, which contains bis-succinimide B or bis-succinimide B' as (D) Component, did not exhibit satisfactory anti-shudder durability ratio.

8. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or

imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: July 1, 2006 Eitaro Morita  
Eitaro Morita